On Theorems of Uniqueness for Ordinary Differential Equations

20-120-4-5/67

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ASSOCIATION: Voronezhskiy gosudarstvennyy universitet (Voronezh State

University)

PRESENTED:

January 29, 1958, by A.N. Kolmogorov, Academician

SUBMITTED:

January 29, 1958

1. Differential equations

Card 2/2

69770 \$/155/59/000/02/011/036

16.3400

AUTHOR: Perov, A.I.

TITLE: On the Quention Concerning the Structure of the Integral Cone

PERIODICAL: Nauchnyye doklady vysshey shkoly. Fiziko-matematicheskiye nauki,

1959, No. 2, pp. 60-66

TEXT: Let the equation

$$\frac{dx}{dt} = f(x,t)$$

be considered with the initial condition

$$x(t_0) = x_0,$$

where f(t,x) is either continuous or satisfies the Caratheodory conditions. Let the lower solution of (1) which passes through  $(t_1,x_1)$  be denoted with  $v(t,t_1,x_1)$ . The solution x=x(t) possesses the property  $E_x$  in  $t=t_1$ , if it exists an  $h_1>0$ , such that  $x(t)\equiv v(t,t_1,x(t_1))$  for  $t_1\le t\le t_1+h$ . Let the real function f(x,t) satisfy the Caratheodory conditions in  $t\le t\le t_1+h$ ,  $-\infty< x<+\infty$  and let  $|f(t,x)|\le N(t)$ , where N(t) is summable on  $[t_0,t_0+h]$ . Let v(t) be the lower and v(t) the upper solution Card 1/4

On the Question Concerning the Structure of the S/155/59/000/02/011/036 Integral Cone

of (1)-(2) on  $\begin{bmatrix} t_0, t_0 + h \end{bmatrix}$ . A solution of (1)-(2) which is defined on  $\begin{bmatrix} t_0, t_0 + h \end{bmatrix}$  and which posesses the property  $E_{\pm}$  everywhere in  $(t_0, t_0 + h)$ , is denoted as an  $E_{\pm}$ -solution. Let U be the set of the  $E_{\pm}$ -solutions. Theorem 1: The formula

(3) 
$$u(t) = \sup_{\mathbf{x}(t) \in \mathbf{U}} \{\mathbf{x}(t)\}, \quad t_0 < t \le t_0 + h$$

defines an  $E_{\sharp}$ -solution of (1)-(2). The solution defined by (3) is denoted as upper  $E_{\sharp}$ -solution. Let x(t) be a solution of (1)-(2) defined on  $t \le t \le t + h$ . Let

(5) 
$$x(t, \tau) = \begin{cases} x(t) & \text{for } t \leq t \leq \tau \\ v(t, \tau, x(\tau)) & \text{for } \tau \leq t \leq t_0 + h \end{cases}$$

Furthermore let

(6) 
$$\Delta_{\mathfrak{A}^{\dagger}} x(t) = \inf_{t_0 \leqslant \tau \leqslant t_0 + h} \left\{ x(t, \tau) \right\}$$
,  $t_0 \leqslant t \leqslant t_0 + h$ .

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On the Question Concerning the Structure of the S/155/59/000/02/011/036 Integral Cone

Theorem 2: The upper E; -solution u(t) can be obtained as the limit of a decreasing transfinite sequence  $\{x_{cl}(t)\}$  of solutions of (1)-(2) which is constructed as follows: 1.  $x_{cl}(t) \equiv w(t)$ , 2.  $x_{cl}(t) = A_{cl} x_{cl}(t)$ , if  $\beta$  is an ordinal number of first kind, 3.  $x_{cl}(t) = \inf_{cl} \{x_{cl}(t)\}$ , if  $\beta$  is an ordinal number of second kind. This transfinite process breaks down  $\{x_{cl}(t)\}$  is denoted as  $\{x_{cl}(t)\}$ , where  $\{x_{cl}(t)\}$  is denoted as  $\{x_{cl}(t)\}$ , where  $\{x_{cl}(t)\}$  is denoted as  $\{x_{cl}(t)\}$ 

every ordinal number 5 of at most denumerable power can be an Ex-characteristic.

Theorem 3: Let y(t) be differentiable, let

(13) 
$$y(t_0) \le x_0$$
,  $y'(t) < f(t,y(t))$   $(t_0 < t < t_0 + h)$ .

Then it is

(14) 
$$y(t) < u(t)$$
  $(t_0 < t \le t_0 + h)$ 

where the upper  $E_{\frac{1}{2}}$ -solution u(t) can be defined by the formula

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On the Question Concerning the Structure of the Integral Cone

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(15)

 $u(t) = \sup \{y(t)\},$ 

where sup is taken over all functions y(t) which satisfy (13). Theorem 4 contains an analogous statement for y(t) which satisfies an integral inequality.

The author thanks M.A. Krasnosel'skiy for advices. There are 5 references: 4 Soviet and 1 Italian.

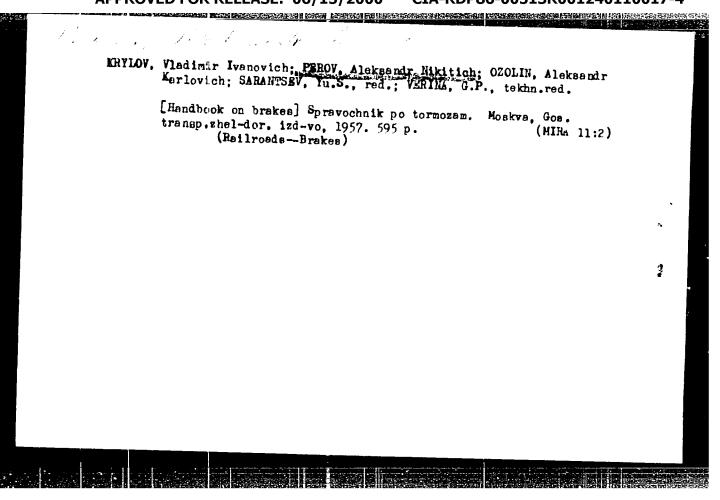
ASSOCIATION: Voronezhskiy gosudarstvennyy universitet (Voronezh State University

SUBMITTED: October 5, 1958 (Uspekhi matematicheskikh nauk)

February 23, 1959 (Nauchnyye doklady vysshey shkoly.Fizikomatematicheskiye nauki)

W

Card 4/4



AUTHOR: Perov, A.I.

SOV/20-122-6-7/49

TITLE

On the Two-Point Boundary Value Problem (0 dvukhtochechnoy kraye-

PERIODICAL: Doklady Akademii nauk, SSSR, 1958, Vol 122, Nr 6, pp 982-985 (USSR) The author considers the boundary value problem

y'' = f(x,y,y')

y(a) = y(b) = 0 (a < b).

Two theorems give conditions for the existence of at least one solution. One theorem guarantees a unique solution and one

theorem gives, under certain rather special conditions, an estimation of the number of nontrivial solutions.

There are 10 references, 4 of which are Soviet, 2 German,

2 Italian, 1 French, and 1 American.

ASSOCIATION: Voronezhskiy gosudarstvennyy universitet (Voronezh State

PRESENTED: June 9, 1958, by P.S. Aleksandrov, Academician

Card 1/2

AJTHORS: Krasnosel'skiy, M.A. and Perov, A.I. SOV/20-

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SOV/20-123-2-6/50

TITLE

On a Principle of the Existence of Bounded, Periodic and ... ost Periodic Solutions of a System of Ordinary Differential Equations (Ob odnom printsipe sushchestvovaniya ogranichennykh, periodicheskikh i pochti-periodicheskikh resheniy u sistemy obyknovennykh differentsial krykh

obyknovennykh differentsial nykh uravneniy)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 2, pp 235 238 (USSR) ABSTRACT: Given the system

(1)  $\frac{dx}{dt} = f(t,x),$ where  $x = (x_1, \dots, x_n)$  and  $f = (f_1, \dots, f_n)$ ,  $f_1 = f_1(t, x_1, \dots, x_n)$  and the  $f_1$  are continuous in  $-\infty < t_1 x_1, \dots, x_n < +\infty$ . Let further  $\lambda(x)$  and  $\lambda(x)$  be two continuously differentiable functions.  $\lambda(-x) = \lambda(x)$ .

 $(f(t,x), \operatorname{grad} \lambda(x)) = \sum_{i=1}^{i=1} f_i \frac{\partial x_i}{\partial \lambda} > 0$ 

for  $||x|| \ge R > 0$ . Let  $m = \min_{\|x\| = R} \lambda(x)$ ,  $M = \max_{\|x\| = R} \lambda(x)$ . On the set T Card 1/3 of those  $x \in E^n$  for which  $m \le \lambda(x) \le M$ ,  $\|x\| > R$ , let  $\mu(x)$  satisfy

On a Principle of the Existence of Bounded Periodic and SOV/20-123-2-5-50 Almost Periodic Solutions of a System of Ordinary Differential Equations

the condition

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$$(f(t,x),grad \lambda(x)+grad \mu(x)) = \sum_{i=1}^{n} i_i (\frac{\partial \lambda}{\partial x_i} + \frac{\partial \mu}{\partial x_i}) \ge 0.$$

where  $\lim_{x \in T, ||x|| \to +\infty} || \wedge (x)| = +\infty$ 

Theorem: Under the given assumptions (1) has at least one uniformly bounded solution in  $(x_i, \infty)$ . If the  $f_i$  are periodic

in t, then (1) has at least one periodic solution of the same period. If the  $f_{\hat{i}}$  are almost-periodic (uniformly in every sphere)

In  $t_i$  then (1) has at least one almost periodic solution. The theorem holds in a strengthened form if instead of  $\mathcal{N}(-1) = 0$ , it is assumed that outside of a certain sphere grad  $\lambda(x) \neq 0$  and that the field of grad  $\lambda(x)$  has a nonvanishing rotation on spheres of a sufficiently large radius (see [Ref 1, 7]). The proof of the theorems is based on the theorem: On the boundary  $\Gamma$  of a bounded domain  $G \subseteq E^n$  let the vector fields f(t,x),  $-\infty < t < \infty$  have a rotation different from zero. For (1)

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On a Principle of the Existence of Bounded, Periodic and Almost-Periodic Solutions of a System of Ordinary SOV/20-123-2-6/50 Differential Equations

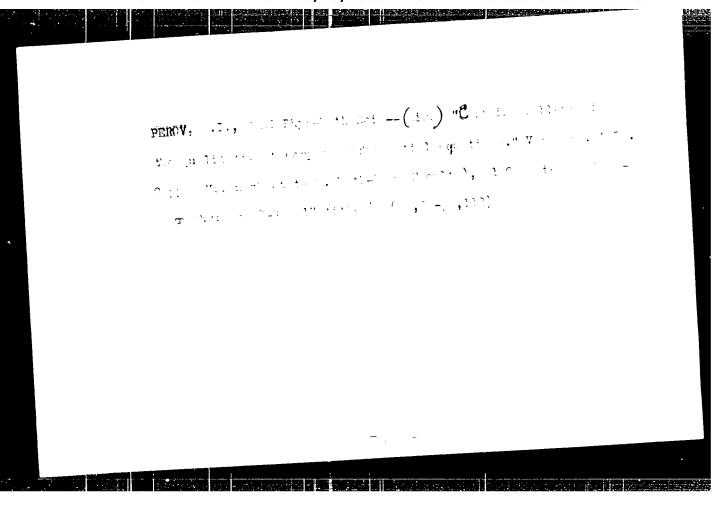
> let be valid the non-local theorems of existence and uniqueness. Let every solution x(t),  $t \in [T_1, T_2]$  of (1) satisfying the initial condition  $x(T_1) \in \Gamma$ , satisfy the condition  $x(t) \neq x(T_1)$ ,  $t \in (T_1, T_2]$ . Then (1) has at least one solution x\*(t) for which  $x^*(T_2) = x^*(T_1) \in G.$ There are 12 references, 9 of which are Soviet, 1 American, and

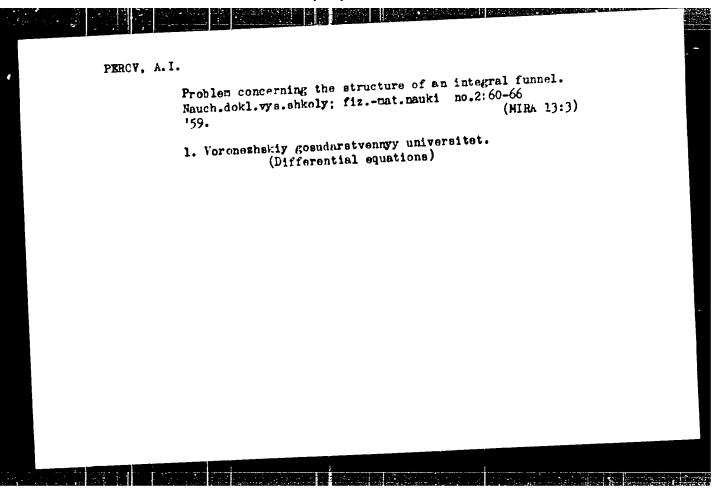
ASSOCIATION: Voronezhskiy gosudarstvennyy universitet (Voronezh State University)

PRESENTED: June 9, 1958, by P.S.Aleksandrov, Academician

SUBMITTEL: May 10, 1958

Card 3/3





15(1) AUTHOR:

SOY/20-124-4-7/67

TITLE:

On the Principle of the Stationary Point With Two-sided Estimates (O printsipe nepodvizhr y tochki s dvukhstoronnimi otsenkami)

ABSTRACT:

PERIOLICAL: Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 4, pp756-759 (USSR) In his paper Ref 4 the author formulated a new type of conditions which have to be satisfied by the right sides of a differential equation y'' = f(x,y,y') in order that the boundary value problem y(a) = y(b) = 0 has a solution. The conditions consisted in giving two-sided estimations for the function f. In the present paper these results are extended to systems of equations. E.g. the system of integral equations

the present parameter 
$$x_{ations}$$
. E.g. the system of integral equations  $x_{ations}$ . E.g. the system of integral equations  $y_{i}(t) = \begin{cases} x_{ij}(t,s)f_{j}(s,y_{1}(s),...,y_{n}(s))ds, & i=1,...,n, \\ x_{ij}(t,s)f_{j}(s,y_{1}(s),...,y_{n}(s))ds, & i=1,...,n, \end{cases}$ 

where the f are measurable with respect to t and have continuous and bounded partial derivatives with respect to other variables, has a unique solution summable in the square if

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CIA-RDP86-00513R001240110017-4" APPROVED FOR RELEASE: 06/15/2000

On the Principle of Stationary Points With Two-Sided Estimates

307/20-124-4-7 67

$$\underline{\underline{a}}_{ij}(t)$$
  $\underline{\underline{f}}_{i}$   $\underline{\overline{a}}_{ij}(t)$  ,

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where a are certain bounded measurable functions. The investigation is combined with the consideration of the topological structure of the two-sided estimates uses results of M.A. Krasnosel'skiy and M.M. Vaynberg. There are 12 references, 8 of which are Soviet, 1 Italian, 2 German, and 1 Swedish.

ASSOCIATION: Vorcnezhekiy gosudarstvennyy universitet (Voronezh State University)

PRESENTED: September 19, 1958, by P.S.Alekoandrov, Academician

SUBMITTED: September 18, 1958

Card 2/2

16(1) AUTHORS:

Krasnosel'skiy, M.A., Perov. A.I.

sov/20-126-1-3/62

3

TITLE:

On the Existence of Solutions for Some Non-Linear Operator Equations (O sushchestvovanii resheniy u nekotorykh neliney.

nykh operatornykh uravneniy)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 1,
pp 15 - 18 (USSR)

ABSTRACT:

Let (f,y) denote the value of the linear functional  $f \in E_y^x$  on the element  $y \in E_y$ ; let  $E_x$  and  $E_y$  be Banach spaces. Theorem: Let the non-linear operator T(x) be continuously differentiable according to Fréchet; let

 $(Bh, T'(x)h) \geqslant \frac{1}{L(||x||)} ||h||^2 (x,h \in E_x)$ 

where B is a linear continuous and continuously reversible operator from E  $_{x}$  into E  $_{y}^{*}$ , while the continuous positive

function L(u) is of Osgood type:  $\begin{cases} \frac{du}{L(u)} = \infty & \text{. Then the} \end{cases}$ 

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for  $x \in H$ . Then T(x) = y possesses a unique solution in H

SOV/20-126-1-3/52 On the Existence of Solutions for Some Non-Linear Operator Equations

Then it is proved that the theorem of Kneser-Hukuhara concerning the integral cone is applicable to different classes of integro-differential equations and ordinary differential equations in Banach spaces.

Finally the case is considered where T'(x) does not possess a continuous inverse operator for all x. S.L. Sobolev is

mentioned by the authors.

There are 15 references, 13 of which are Soviet, 1 German,

and 1 Japanese.

ASSOCIATION: Voronezhskiy gosudarstvennyy universitet (Voronezh State

University)

January 16,1959, by P.S. Aleksandrov, Academician PRESENTED:

January 13,1959 SUBMITTED:

Card 3/3

ACCESSION NR: AT5012001 S/3121/64/000 002/0115/0134

AUTHOR: I et ov. A.I.

TITLE: Catchy's problem for a system of ordinary differential equations | 0 |

SOURCE: AY UkrSSR. Institut matematiki. Priblizhennyve metody resheniya differentialeili'nykh uravneniy, no. 2, 1964, 115-134

TOPIC TACI! differential equation, ordinary differential equation approximation, matrix, linear operator; operator metric space, Cauchy problem

ABSTRACT: The paper deals with Cauchy's problem  $\frac{di}{dt} = Ax + f(t, x).$  x(0) = 0.(2)

where x is an in-dimensional vector, A a constant matrix, f(x, t) is a vector function continuous in the region o t a, and ix b (i = 1, ..., n) with the exception of the point Card 1/3

L 25250-65 ACCESSION TR: ATS	5002005	2
new conditions for the Along the way, certai ciples, are derived. satisfy	Two fixed point theorems are stated, which are used to uniqueness and convergence of approximate solution to in non-negative matrices, which are involved in the fixed Tile basic restriction involved in the development is the	ed-point prin-
1/0.	$ f(t,y)  \leq L(t) x-y   (0 < t < a;  x ,  y  < b),$	(3)
contained in the following to the angle of the conditions (3) and (4)	in ion-negative matrix function. The final results of the wing two theorems: A) Let $f(t,x)$ be continuous in the which includes the point $t=x_1=x_2\ldots=x_n=0$ , and above, while the derivative $L(s)J(s)$ is summable over $\begin{pmatrix} 0 & 1 & 0 & \dots & 0 \\ 0 & 0 & 1 & \dots & 0 \end{pmatrix}$	atisfy the
Card 2/3	$ \begin{cases} (1, x) = \begin{pmatrix} 0 & 0 & 1 & 1 & 0 \\ 0 & 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \\ 0 & 0 & 0 $	(5)

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e an -matrix at s	ome h 0, the	en the Cauchy problem	i has a single soluti	on x*(t). If cor-	
roximation beginning	og with any co	nthugus function x(0)	can be obtained by	successive ap-	
COUNTY OF THE PARTY OF THE PART		b). B) Under the san s Cauchy problem als	in according to the state of th		i
ound by the method	of successive	approximation.	o nas a single solut	ion which can be	,
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8/3					

AUTHOR: Perov, A.I.

S/020/60/132/03/12/066

TITLE: Periodical, Almost remodical and Bounded Holutions to the Differential Equation  $\frac{dx}{dt} = f(t,x)$ 

PERIODICAL: Doklady Akademii nauk NSR, 1960, Vol. 132, No. 3, pp. 531-534

TEXT: In the real Hilbert space H the author considers the equation

$$\frac{\mathrm{d}x}{\mathrm{d}t} = f(t,x)$$

The norm of the element  $x \in \mathbb{R}$  is denoted with |x|. The theorems 1 and 2 contain a summary of well-known facts for the linear case. The theorems 3 and 4 generalize the theorems 1 and 2 to the non-linear case. Theorem 3: Let the operator f(t,x) with values in  $\mathbb{R}$  be continuous in  $f(t,x) \in \mathbb{R}$  to  $f(t,x) \in \mathbb{R}$ .

(9) 
$$|f(t,x_1) - f(t,x_2)| \leq L_1 x_1 - x_2.$$

Let

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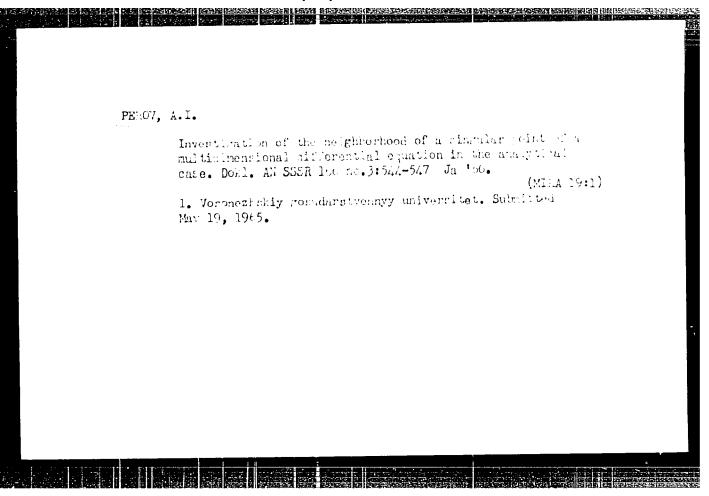
PERO7, A.I.

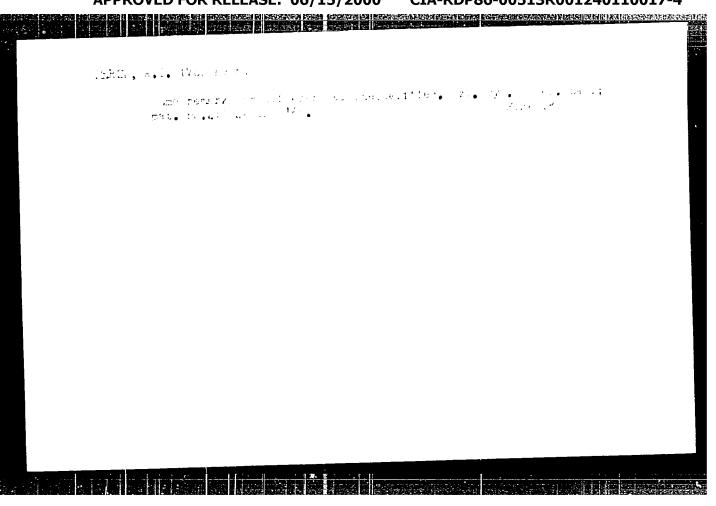
Multidimensional linear differential equation of the second order. Dokl. AN SSSR 159 no.4:755-758 D'64 (MIRA 18:1)

1. Voronezhskiy gosudarstvennyv universitet. Predstavleno akademikom A. Yu. Ishlinskim.

D'64

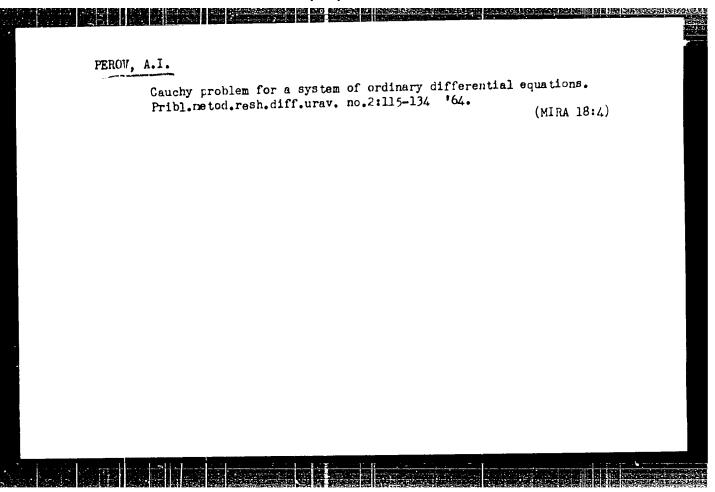
ī	1. 34017-66 EMT(4) IJI(a) ACC NR. AP6025490 SOURCE CODE: UR/0038/66/030/002/024/02-64
:	AUTHOR: Perov, A. I.; Kibenko, A. V.
	ORG: Voronezh State University (Voronezhskiy gosudarstvennyy universitet)
	TITLE: General method of investigating boundary value problems
1	SOURCE: AN SSSR. Izvestiya. Seriya matematicheskaya, v. 30, no. 2, 1366, 249-264
; 	TOPIC TACS: differential equation system, boundary value problem, existence
	ABSTRACT: The article is devoted to applications of generalized fixed-point principles to unique existence problems in the solutions of certain boundary value problems for systems of ordinary differential equations and for n-th order equations. Orig. art. has: 58 formulas. [JPRS: 36,775]
	SUB CODE: 12 / SUEM DATE: OAMay64 / ORIG REF: 008 / OTH REF: 003
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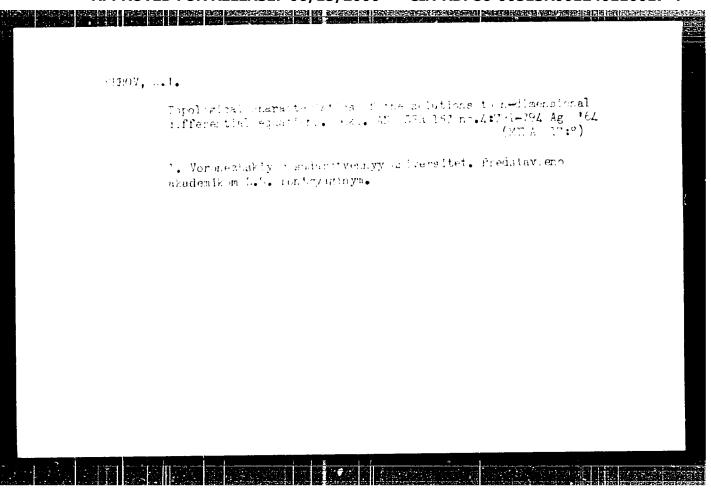




	5 EWT(d) NR: AP501		
		D. Perov, A. I.	A TANKS
48	PMP: 194 PF S Separation and a second	io al integral equations and inequalities of the Volterra typ	e
source: !	N Azerbser. 1, 1965, 7-	Investiya. Beriya fiziko-tekhnicheskikh i matematicheskikh	Trailing the second
TOPIC TAGE rem, uniqu	: integral eness theor	equation, Volterra equation, linear equation, existence theom, nonlinear integral equation	
the solution that	ons of which certain de	deals with the multidimensional Velterra integral equation, are vector functions y(x) of a vector variable x. It is fuctions of the theory of one-dimensional Volterra equations under simple modifications, also in the multidimensional cases.	egilished and the side was a task
integral	quation and	the article is devoted to a definition of the linear Volterra the mulidimensional equation, and the existence an unique- of the Volterra equation is proved. One explicit Volterra	
an intian	f a medial	type is presented and a theorem concerning integral inequali- second section is devoted to nonlinear integral equations and	
TIRE DE I	es. for whi	th existence, uniqueness, and other theorems are proved. It is that if all the conditions of these theorems are satisfied,	

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then a uni.	ne solution o	of the equation exists and that this of the convergence of the Tonelli at then examined. Orig. art. has: 38	GU LIGHLG DECTIONS OF
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NR REF SON	003	OTHER: 003	
7), K			





ACCESSION NR: AP4019961

\$/0020/64/154/006/1266/1269

AUTHOR: Perov, A. I.

TITLE: On multidimensional linear differential equations with constant coefficients

SOURCE: AN SSSR. Doklady\*, v. 154, no. 6, 1964, 1266-1269

TOPIC TAGS: differential equation, linear differential equation, cauchy problem, constant coefficient differential equation, multidimensional linear differential equation, vector space

ABSTRACT: This paper presents some results which generalize standard theorems of linear algebra and theory of linear differential systems with constant coefficients. Suppose that  $E_{\rm x}$  is an m-dimensional space and  $E_{\rm y}$  is an n-dimensional space (each of them can be both a real and a complex vector space). The cauchy problem is examined for the linear equation (A  $\leftarrow$  Ey(xy))

$$\frac{dy}{dx} = Ay,$$

$$y(\xi) = \eta \qquad (\xi \in E_x, \ \eta \in E_y).$$

Card 1/2

ACCESSION NR: AP4019961

and the adjoint problem

$$\frac{d\varphi}{dx} = -A'\varphi,$$
  
$$\varphi(\xi) = \theta \quad (\xi \in E_x, \ \theta \in E_{\varphi}).$$

Six theorems are then proved. "Author wished to express his gratitude to Academician I. G. Petrovskiy." Orig. art has: 26 equations.

ASSOCIATION: Voronezhskiy gosudarstvenny\*y universitet (Voronezh State University)

SUEMITTED: 090ct63 DATE ACQ: 23Mar64

ENCL: 00

SUB CODE: MA

NO REF SOV: 004

OTHER: 003

Card 2/2

PEROW, A.I.

n-Dimensional linear differential equations with constant coefficients.

Dokl. AN SSSR 154 no.6:1266-1269 F '64. (MIRA 17:2)

1. Voronezhskiy gosudarstvennyy universitet. Predstavleno akademikom I.G.Petrovskim.

FEROV, A.I.

Boundary value problem for a system of two differential equations.
Dokl.AN SSSR 144 no.3:493-496 by 162. (MIRA 15:5)

1. Voronezhskiy gosudarstvennyy universitet. Predstavleno akademikom
S.L.Scholevym.
(Foundary value problems) (Differential equations)

KIBENKO, A.V.; PEROV, A.I.

Two-point boundary value problem with a parameter. Dop. AN URSR no.10:1259-1266 '61. (MIRA 14:11)

1. Voronezhskiy gosudarstvennyy universitet. Predstavleno akademikom AN USSR I.Z.Shtokalo.
(Boundary value problems)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240110017-4"

5,8220 5/020/62/144/003/003/030 16 2410 B112/B104 Perov, A. I. AUTHOR: Boundary-value problem for a system of two differential TITLE: PERIODICAL: Akademiya nauk SSSR. Doklady, v. 144, no. 3, 1962, 493-496 TEXT: The boundary-value problem dx/dt = f(t, x, y),  $\frac{dy/dt = g(t, x, y),}{x(a)\sin c - y(a)\cos c} = 0, x(b)\sin\beta - y(b)\cos c = 0 (0 \le \alpha < \pi, 0 \le \pi) is$ considered and shown to be solvable unambiguously if f and g are continuously differentiable with respect to x and y, and if  $f_x'(t, x, y)$  and  $g_y'(t, x, y)$ satisfy an inequality  $\frac{f'_{\mathbf{X}}(\mathbf{t}, \mathbf{x}, \mathbf{y}) - f'_{\mathbf{y}}(\mathbf{t}, \mathbf{x}, \mathbf{y})}{\underline{A}(\mathbf{t}) \leqslant \frac{\mathbf{g}'_{\mathbf{X}}(\mathbf{t}, \mathbf{x}, \mathbf{y}) - \mathbf{g}'_{\mathbf{y}}(\mathbf{t}, \mathbf{x}, \mathbf{y})} \leqslant \overline{A}(\mathbf{t}),$ where  $\underline{A}(t)$  and  $\overline{A}(t)$  are matrices of a certain class  $\overline{B}_k$ . Card 1/2

Boundary-value problem ...

5/020/62/144/003/003/030 B112/B104

ASSOCIATION: Voronezhakiy gosudarstvennyy universitet (Voronezh State

University)

PRESENTED:

January 15, 1962, by S. L. Sobolev, Academician

SUBMITTED:

December 16, 1961

Cari 2/2

PEROV, A. I. and KRASNOSELSKIY, M. A.

"On some features of the existence of periodic solutions for the systems of ordinary differential equations."

Paper presented at the Intl. Symposium on Monlinear Vibrations, Kiev, USSR, 9-19 Sep 61

Voronezh State University, Voronezh, USBR

MELAJED, V.B.; PEROV, A.I.

Generalization of M.A.Krasnosel'skii's theorem on the complete continuity of the Frechet derivative of a completely continuous operator. Sib. mat. zhur. 4 no.3:702-704 My-Je '63. (MIRA 16:6) (Operators (Mathematics)) (Krasnosel'skii, M.A.)

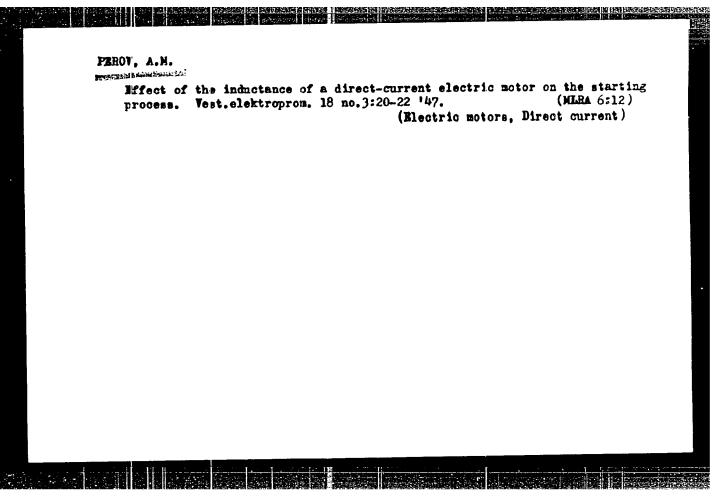
KRASNOSEL'SKIY, Mark Aleksandrovich; PERCV, Anatoliy Ivanovich;
PC VOLOTSKIY, Abram Isaakovich; ZABREYKO, Petr
Petrovich; GCRYACHEV, M.M., red.; AKSEL'RCD, I.Sh.,
tekhn. red.

[Vector fields on a plane] Vektornye polia na ploskosti.
Moskva, Fizmatgiz, 1963. 245 p. (MIRA 16:11)

(Vector analysis)

KRYLCV, Vladimir Ivanovich; PEROV, Aleksondr Nikitich; OZOLIN, Aleksapir Karlovich; SaraNiSEV, Yu.S., red.

[Manual on brakes] Spravochnik po tormozam. 1zd.2. Moskva, Transport, 1965. 509 p. (MIRA 18:6)



PEROV, A.M., Glavnyy mekhanik.

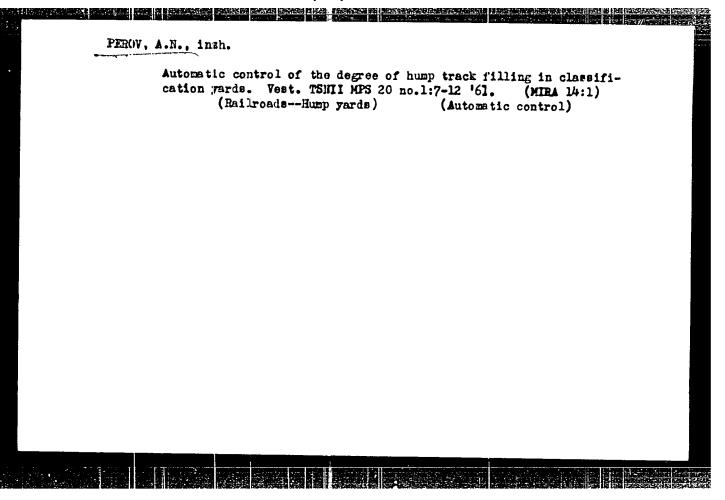
Operating conveyer lines by automatic remote control. Mekh.trud.rab. 7 no.5:23-24 My '53. (MLRA 6:5)

1. Trest Neswetayantratsit. (Conveying machinery)

PEROV, A.N., inzh.

Relexation tests to determine the conditions of tempering welded structures and the heat resistance of steel. Svarka 2:131-138 (MIRA 14:5)

(Structural frames—Welding) (Metals, Effect of temperature on)



MATROSOV, I.K., laureat Stalinskoy premii; YEGORCHRNKO, V.F.; KARVATSKIY, B.L.; AGAFONOV, M.I.; KRYLOV, V.I.; PEROV, A.H.; KRUTITSKIY, V.F.; SUYAZOV, I.G.; TIKHONOV, P.S., red.; KHITROV, P.A., tekhn.red.

[Automatic brakes; installation, operation, maintenance, and repair] Avtotormoza; ustroistvo, upravlenie, obsluzhivanie i remont. Izd.4., ispr. i dop. Moskva, Gos.transp.zhel-dor.izd-vo, 1951. 253 p. (MIRA 12:11)

PEROV, A.N., starshiy nauchnyy sotrudnik

Automatic speed control system in mechanized hump yards. Part 5: Device for determining the length of the runs between uncouplings. Avtom., telem.i sviaz: 6 no.2:4-7 F '62. (MIRA 15:3)

1. Vs@soyuznyy nauchnowissledovatel'skiy institut zheleznodorozhnogo transporta Ministerstva putey soobshcheniya.

(Railroads---Hump yards) (Railroads----Electronic equipment)

AGAPONOV, Mikhail Ivanovich; PEROV. Aleksandr Bikitich; BRAYLOVSKIY, B.G., inchener, redaktor; VERINA, G.F., teknincheskiy redaktor

[Design and repair of automatic brakes] Ustroistvo i remont avtotormosov. Isd. 4-oe, perer. i dop. Moskva, Gos. transporshel-dor. isd-vo, 1955. 227 p.

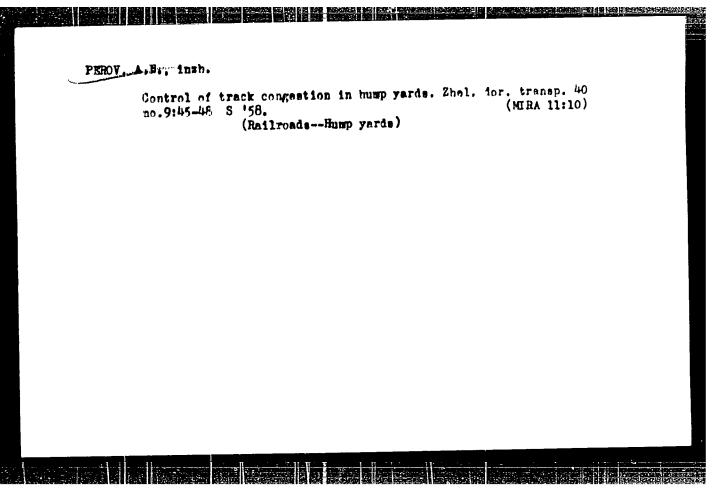
(Brakes)

(MIRA 9:1)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240110017-4"

AGAFONCV, Mikhail Ivanovich; PEROV, Aleksandr Mikitich; BRAYLOVSKIY, N.G., inzh., red.; EHITROV, P.A., tekhn.red.

[Arrangement and repair of automatic brakes] Ustroistvo i remont avtotormozov. Izd. 5., perer. i dop. Moskva, Gos. transp. zhel-dor. izd-vo, 1958. 271 p. (MIRA 12:2) (Railroads--Brakes)



AGAFONOV, M.I.; PEROV, A.N.; KLYKOV, Ye.V., red.; BOBROVA, Ye.N., tekhn.red.

[Quide for an inspector of automatic equipment] Rukovodstvo osmotrahchiku-avtomatchiku. Izd.5., perer. i dop. Moskva, Vses. izdatel'sko-poligr.ob"edinenie M-va putei soobshcheniia, 1960.
171 p. (MIRA 13:5)
(Railroads--Brakes) (Automatic control)

是一个一个人,我们们也是没有的人,我们就是这个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人 第一个人,我们们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们

KOMMROV, S.G.; SAMOKHVALOV, S.F.; BELAVENTSEV, N.V.; BOMBARDIROV, P.P.;

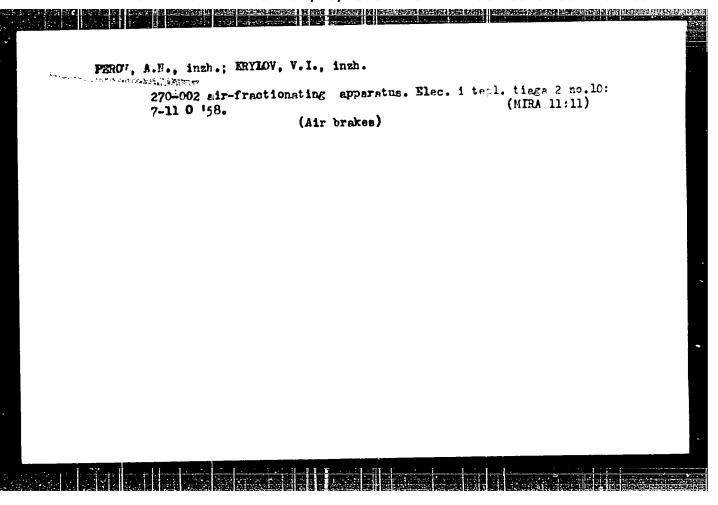
AMELINA, A.A.; BLIZNYUK, V.P.; LADYGIN, V.I.; PEROV, A.H.; VASIL'YEV,

I.P.; BRODOVICH, N.B.; RABIHOV, A.M.; ALEKSEYEV, V.D.; TEGOROV,

V.A., inzh., red.; ARSHINOV, I.M., inzh., red.; VERINA, G.P., tekhn. red.

[Handbook on the repair of freight cars] Spravochnik po remontu gruzovykh vagonov. Moskva, Gos. transp. zhel-dor. izd-vo, 1958. 503 p. (MIRA 11:12)

(Railroads--Freight cars--Maintenance and repair)



AGAMONOV, Mikhail Ivanovich; PEROV, Aleksandr Nikitich; BEKHTEREV, V.D., retsenzent; BAZHOV, I.S., retsenzent; SHIBER, R.A., retsenzent; RRAYLOVSKIY, N.G., red.; KHITROV, P.A., tekhn. red.

[Design and repair of automatic brakes] Ustroistvo i remont avtotormozov. Izd.6., perer. i dop. Moskva, Vses. izdatel'skopoligr. ob\*edinenie M-va putei scobshcheniia, 1961. 270 p.
(MIRA 14:8)

(Railroads-Brakes)

PEROV, A.P., referent.

Pused magnesium oxide crucible for a laboratory vacuum smelting furnace (from: "Archiv für das Eisenhüttenwesen" no.9 1956).
Abstracted by A.P. Perov. Ogneupory 22 no.4:188 '57. (MLRA 10:6) (Hetallurgical laboratories--Equipment and supplies)

AUTEOR: Perov, A. 133-8-11/28

TITLE:

The influence of vacuum treatment on properties of

austemitic heat resistant steels and alloys. (Vliyariye vakuumirovaniya na svoystva austenitnykh zharoprochrykh staley i splavov.)

PERIODICAL: "Stal" (Steel), No.8, 1957, pp.719-721 (USSR).

ABSTRACT: Abstracted from "Stahl und Eisen", 1956, B.76, No.16,

2040.

There are 4 tables and 2 figures.

AVAILABLE: Library of Congress

Card 1/1

AUTHORS:

Saksonov, L.G., Perov, A.P.

SOV/128-58-11-15/24

TITLE:

The Surface Strengthening of Cores for Ingot-Molds (Poverkh-

nostnoye uprochneniye sterzhney dlys izlozhnits)

PERIODICAL:

Liteynoye proizvodstvo, 1958, Nr 11, p 28 (USSR)

ABSTRACT:

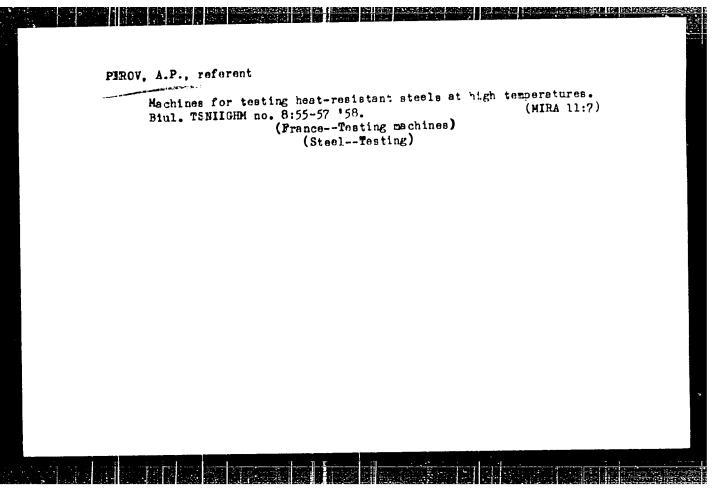
It was stated that the surface warping of ingot molds was caused by the low mechanical strength of the core surface layer. The experiences of the "Stankolit" plant were used in a method of surface strengthening of ingot-mold cores in a method of surface strengthening of ingot-mold cores with "ZIS-3" strengthener, composed of 25% petroleum bitumen, with "ZIS-3" strengthener, composed of 25% petroleum bitumen, 55% shale tar and 20% white spirit. Application of the strengthener caused the formation of a 2 - 3 mm thick crust which is more resistant than the core. The use of the new material reduced the amount of spoilage from 2.05 to 0.23 %.

1. Molding materials—Mechanical properties 2. Surfaces—Preparation

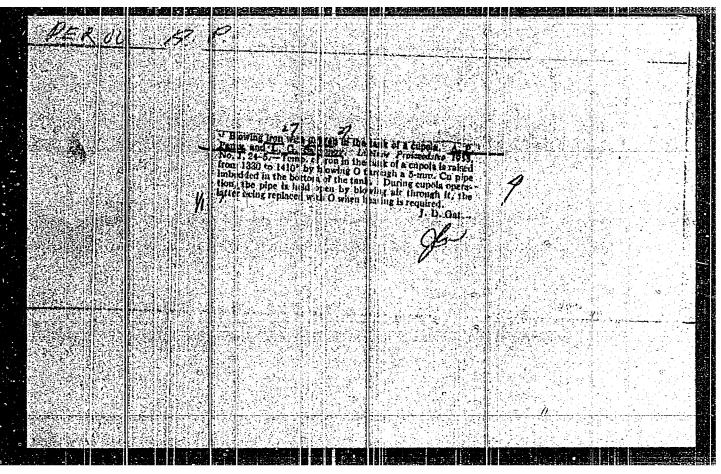
Card 1/1

PEROV, A.P. [translator]; OYKS, G.N., doktor tekhn.nauk, red.;
PETRUSHA, L.F., red.izd-va; MIKHAYLOVA, V.V., tekhn.red.

[Efficiency of various methods of riser head heating] Effektivnost' rezlichnykh metodov utepleniia pribyli. Moskve. Gos.nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii. 1959. 56 p. Translated from the English. (MIRA 14:1) (Steel ingots)



"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240110017-4



PEROV, A.V.

USSR/Farm Animals - Cattle.

**Q-3** 

Abs Jour

: Ref Zhur - Biol., No 1, 1958, 2569

Author

: A.V. Perov

Inst Title : - Blood Composition of Calves of the Yaroslav Breed, Depen-

ding on the Content of Fodder.

Orig Pub

: Tr. Yaroslavsk. s-kh. in-ta, 1956, 3, 124-130

Abstract

: The experiment was made on two groups of heifers (12 animals in each group). The animals were selected because of similarities. The content of their rations was different, but the nutritive value of the fodder was the same for both groups. In the first group of heifers, almost one half of the nutritive fodder was vegetable. In the second group almost one third of the fodder consumed was vegetable. At the age of three months the heifers of the second group showed a blood picture in which the erythrocytes were by 7.4 percent and the Hb by 2.5 percent

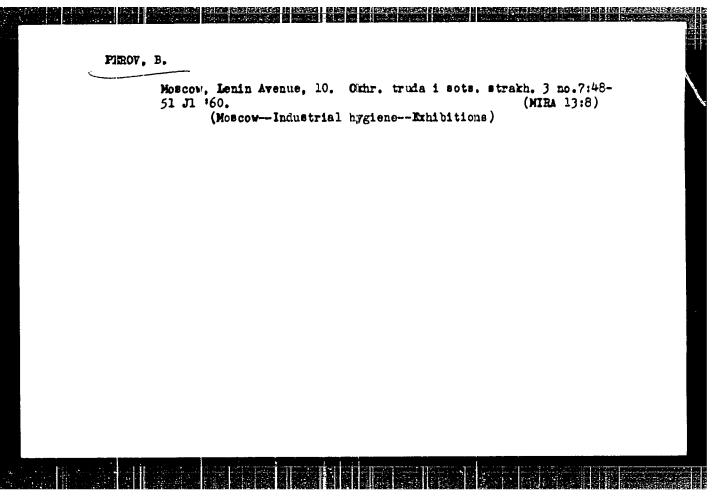
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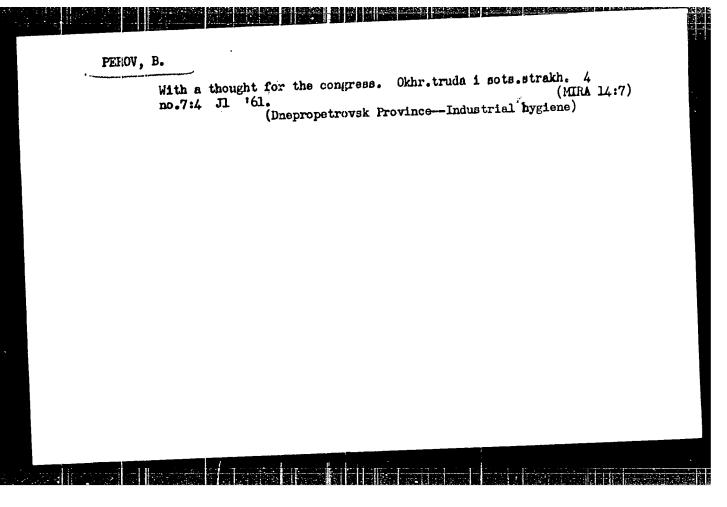
PEROV, A.V.

Pamiatka pechatniku (Booklet for the printer).

(2. ispr. izd. Leningrad) Gizlegprom, 1945. 40 p.

SO: Monthly List of Russian Accessions, Vol. 6, No. 1, April 1953





PEROV, B. People's university. Okhr. truda i sots. strakh. 4 no. 2:16 (MIRA 14:2)

F 161.

l. Spetsial'nyy korrespondent zhurnala "Okhrana i sotsial'noye strakhovaniye," g.Zaporozh'ye.

(Zaporozh'ye—Industrial hygiene—Study and teaching)

CIA-RDP86-00513R001240110017-4" APPROVED FOR RELEASE: 06/15/2000

INDEDEV, N.A., dots.; PEROV, B.A.

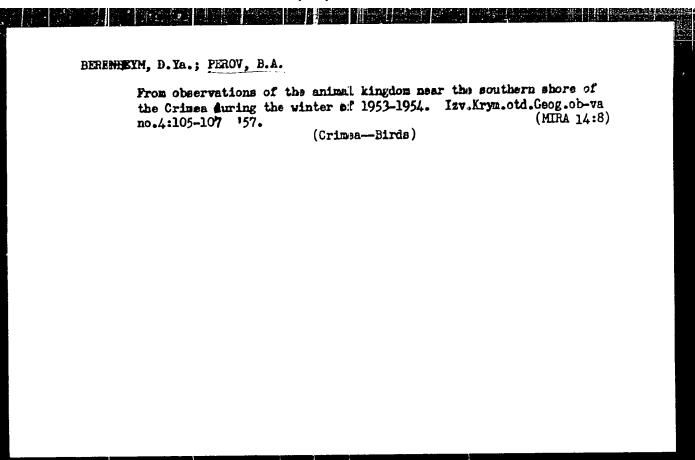
Use of dosimeter for solar ultraviolet radiation [with summary in English]. Gig. i san. 24 no.2:11-16 F '59. (MIRA 12:3)

1. Iz kafedry fiziki Krymskogo pedagogicheskogo instituta imeni M.V. Frunze. (SUNLIGHT

dosimeter used at health resorts for determ. of intensity & dose of ultraviolet radiation (Rus))

OLEFIR, F.F., hand. tekhn. nank; ROGANOV, F.V.; OREHKL!, A.D.; MUDRAGKL!, A.V.; TIMOSHENKO, E.V.; PEROV, B.P.

Introducing an astat'; control system of strip tension at coilers on a reversing cold rolling will. Avt. i prib. no.4:7-11 0-D '64 (MIRA 18:2)



15 8:130

25527

S/122/60/000/001/016/018 A161/A130

AUTHOR3:

Perov, B. V., Candidate of Technical Sciences; Kargin, V. A., Academician; Gudimov, M. M., Candidate of Chemical Sciences

TITLE:

Production of oriented polymethyl metacrylate and manufacture of

articles from it

PERIODICAL: Vestnik mashinostroyeniya, no. 1, 1960, 70-75

TEXT: The information presents the results of investigations and experiments which have been undertaken in view of lack of process and equipment data in special literature, including foreign sources. Methods studied in the subject experiments were: 1) double blister settling method; 2) two-dimensional stretching of sheets; 3) calendering; L) pressing. Two-dimensional multi-axial stretching and pressing proved technically best and cheapest. Several machines have been developed. Their work principle is stretching of a sheet in 12 radial directions. Sheets up to 2 m in diameter and 15 mm thickness can be obtained, which a stretching degree  $\mathcal{E} = 50 \div 60\%$ . The major machine element is the pulling unit consisting of a bevel gear couple, one of the gears moving on thread on a screw, i.e., the gear works as a nut, and moves the screw with a grip

Card 1/3

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S/122/60/000/001/016/018 A161/A130

Production of oriented polymethyl ...

attached to it. The machine has 12 such units; one of them is connected to a worm genr reducer and drives the entire system. The stretching effort is determined by calculation, for producing tension stress of 10 kg/cm<sup>2</sup>. The same principle is used in machines for producing square sheets. Pre-stretching was determined with the formula

$$\varepsilon_{\rm pr} = \left(\sqrt{\frac{h_{\rm init}}{h_{\rm fin}}} - 1\right) 100\% \tag{1}$$

where  $h_{init}$  and  $h_{fin}$  is the initial and the final sheet thickness in mm. The formula has been derived by simple mathematical transformations of an equation expressing the constancy of volume before and after stretching. The empirically determined relation between the linear stretching L (measured with a nonius on one of the grips) and the stretching degree (found with Formula 1) is:

$$L = \frac{D_{\epsilon_{pr}}}{200}$$

where D is the blank diameter. The orientation method by compression has been developed as well, for producing sheets, for instance, of  $750 \times 750$  mm size and 25 mm thickness. In both methods the temperature of material must exceed its

Card 2/3

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S/122/60/000/001/016/018 A161/A130

Production of oriented polymethyl ...

softening point by 15-10°C. Heating to a higher temperature spoils the properties, and a lower temperature cannot be used because of an abrupt load increase on the machine drive and micro-cracks on the material. The strength of polymethyl acrylate increased with increasing stretching degree to 50-70% considerably, and after this limit the growth of mechanical properties was only slow, except for impact resistance  $(\alpha_k)$  increasing evenly to the stretching degree E = 120 ♦ 130%. The static strength of parts from oriented material proved double comparing with parts from nonoriented; oriented glass did not split from sharp nail hammered into it (nonoriented split after penetration of the nail to 1/3 of depth). Oriented glass withstood bending tests in all temperatures except of below -60 °C. Other advantages of oriented glass are: surface crack resistance dozens of times higher than of nonoriented; lower thermal expansion. Parts from oriented glass are produced with bending and fixing in frames and subsequent heat treatment to fix the shape. Cylindrical parts are formed in the same way. Orientation of heat-resistant organic glass decreases its inherent brittleness. N. D. Sobolev is mentioned having participated in the work. There are 9 figures and 1 table.

Card 3,/3

PHASE I BOOK EXPLOITATION

SOV/5684

Perov, Boris Vital'yevich, and Matvey Matveyevich Gudimov

Orientirovannoye organicheskoye steklo (Oriented Organic Glass)
Moscow, Oborongiz, 1961. 49 p. Errata slip inserted. 3,850 copies printed.

Reviewer: Yu. S. Lazurkin, Doctor of Fhysics and Mathematics; Ed. of Publishing House: L. E. Sheynfayn; Tech. Ed.: V. P. Rozhin; Managing Ed.: A. S. Zaymovskaya, Engineer.

PURPOSE: This booklet is intended for engineers and technicians in aero-nautical, chemical, automobile and other industries. It may also be useful to students in chemical and technological schools of higher education and in tekhnikums.

COVERAGE: The authors describe a new hardening treatment of transparent plastics which produces an oriented material by extending heated plastic sheets in the plane of the sheet. Techniques used in manufacturing oriented plastics, properties of such material, methods for manufacturing plastic articles, and problems of industrial applications of oriented transparent plastics are discussed. No personalities are mentioned. There are no references.

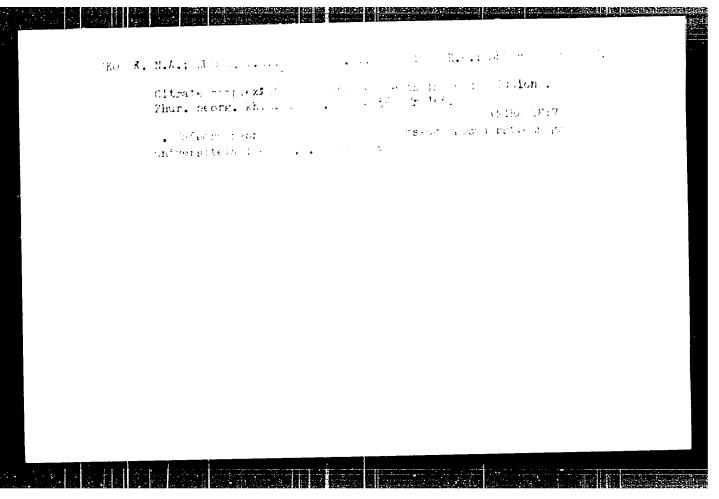
Card 1/3

PERDV, Boris Vital'yevich; GUDIMOV, Matvey Matveyevich; LAZUHKIN, Yu.S., dokt. fiz.-mat. nauk, prof., retsenzent; SHEYNPAYN, L.I., red. izd-va; ROZHIN, V.P., tekhn. red.

[Oriented organic glass] Orientirovannoe organicheskoe steklo.

Moskva, Gos.nauchno-tekhn. izd-vo Oborongiz, 1961. 49 p.

(Plastics) (MIRA 14:6)



L 313 8-65 ACCESSION N :	EWT(m)/EWP(t)/EWP(b)	D/JOS/0081/64/000/018/G007/G008
AUTHOR: Pa o	zh Khimiya, Abs. 18666 ov, E. I.; Serebrennikov, V.	일일, 그들은 그리고를 가게 된 것은 그는 그 그리고 하는 말을 했다.
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En end Yh li supporting	the presence of other tare eart legrolyte produce waves with Epigenet course.	d is described for the determination of helements. Eu and Yb in 0.1 M KCl 2-0.7L and -1.395 V (with respect to the wave heights are proportional to
the concent a interval. It is \$ 5% and 1 mination of E	ation of these elements in the sine Yb wave is most pronounced at (b = 10%. Sm and Ce interfere was and Yb; the sample is dissoluted the control of the cont	ph 5-6. The error in determining Eurith the determination. For the determination in HCl, the ph of the solution is precipitated with HoS, the solution is
boilled and Fi	iltered. Fare earth hydroxides	are then precipitated with ammonia, the

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AUTHOR: Shortk, N. A.	; Kumok, V.H.; Ferov, E.L.; Avgustan, K.P.; Serebrennikov, V.V.
TITIE Citrite comple	exes of rare earth elements in soid solutions
SOURCE: Zhu nal neorg	genicheskoy khimii, v. 10, no. 3, 1965, 653-656
TOPIC TAGS: citrate (ion, columniaty productrate	complex, citrate ion, rare earth element, rare earth element of, lanthanum ctirate, praseodymium citrate, neodymium ci-
carried out at 0.10 in equal brown. The cit	ation of $\beta_1$ and $\beta_2$ stability constants of InCit and InCit2.  ducts of InCit: iii20 precipitates for In., Pr., and Nd., was onic strength and 250 to obtain quantitative data on ionic rate ion in the presence of excess lanthanum was determined by method (by absorption of the Cu <sup>2+</sup> citrate complexes) with an
SF-4 pectriphotomete	r. Solubility curves of LnCit·nH2O as a function of H, as rvis of LaCit·H2O, PrCij·3.5H2O, and NdCit·3.5H2O in NaClOn-H 6.7-1.4 and in NaClOn Ln(ClOn) 3 solutions at H 5.7 have
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ACCESSION NR: AR4015682

8/0081/63/000/023/0089/0089

SOURCE: RZh. Khimiya, Abs. 23B612

AUTHOR: Perov, E. I.; Serebrennikov, V. V.

TITLE: Reduction of europium at a dropping mercury electrode in a citrate-acetate medium

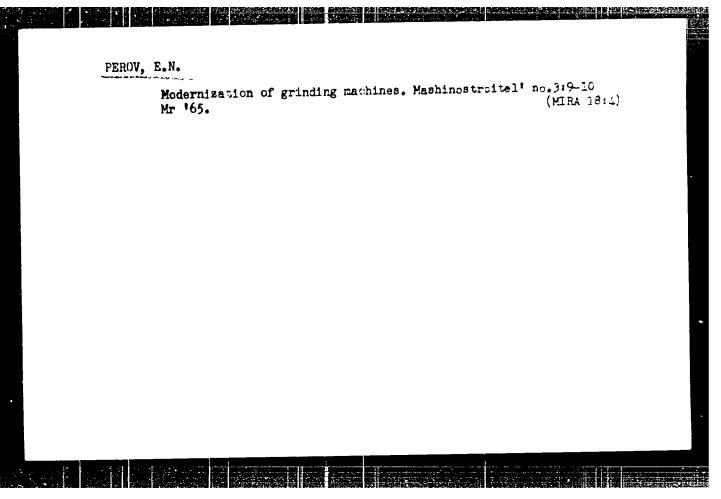
CITED SOURCE: Tr. Tomskogo un-ta, v. 154, 1962, 161-165

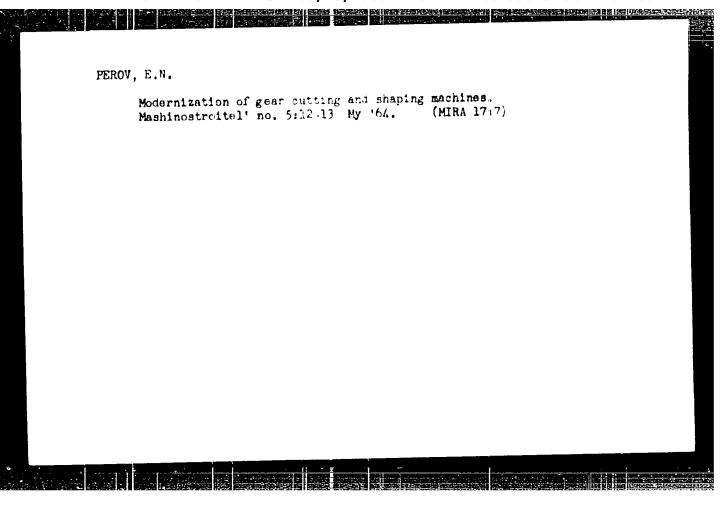
TOPIC TAGS: europium, europium reduction, electrolytic reduction, dropping mercury electrode, polarography, amalgam

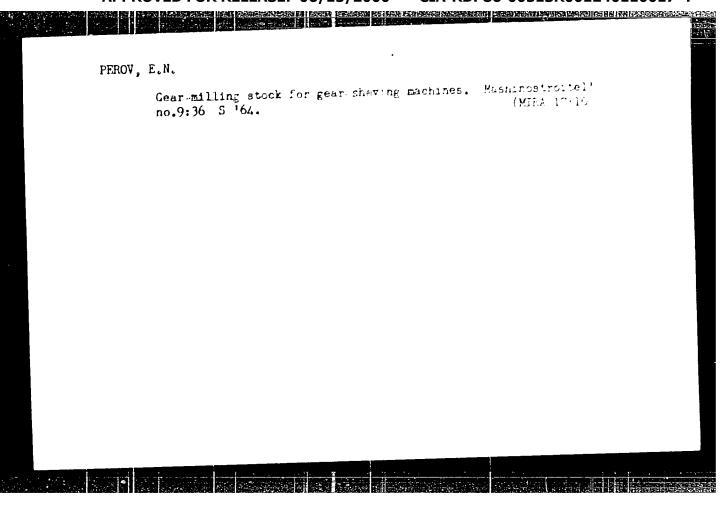
TRANSLATION: In citrate and acetate solutions in which stable Eu<sup>+3</sup> complexes are formed in neutral and basic pH ranges, double-wave polarograms of Eu<sup>+3</sup> were observed. The first wave corresponds to the reaction Eu<sup>+3</sup> +e  $\longrightarrow$  Eu<sup>+2</sup>, the second to the reaction Eu<sup>+2</sup> + 2e  $\longrightarrow$  Eu(Hg). The existence of the second process was confirmed by the electrolysis of solutions isotopically labeled with Eu<sup>152</sup> and Eu<sup>164</sup>. At a dropping Hg-electrode with subsequent determination of the radioactivity of the Eu amalgam formed, the radioactivity of the Hg cathode increases sharply at the potential of the second wave of Eu<sup>+3</sup>, which indicates the formation of an Eu amalgam. In the presence of lithium citrate the E1/2 of the first

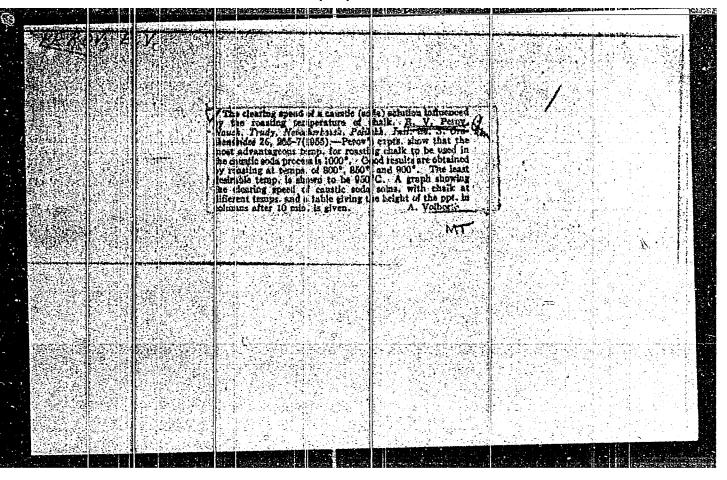
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in this mediw	n. The acet ic graph of t eeds irrever	ate compli he wave Δ sibly. Th	ex of Eu (3+) h E/∮∆lgi/∫i	ns low stability. (initial) - 1]3 = 0.	lity of the Eu (3+) com Judging by the slope of 1-0. 13 volts, the first versible (the slope of	f t
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1.	HEROV.	G.

- 2. USSR (600)
- 4. Economics
- 7. I.V. Stalin on the law of planned, proportional development of the national economy, G. Perov, Flan.khoz. no. 1, 1953.

9. Monthly List of Russian Accessions, Library of Congress, APRIL 1953, Uncl.

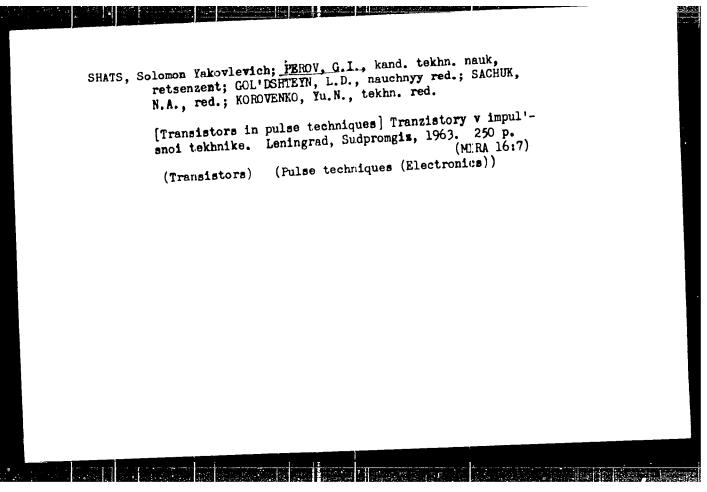
- 1. PEROV, G.
- 2. USSR (600)
- 4. Stalin, Josif, 1879-1953
- 7. I. V. Stalin on the law of planned, proportional development of the national economy, No. 1, 1953.

9. Monthly List of Russian Accessions, Library of Congress, April, 1953, Uncl.

60015 65 BWT (d IP(c) BB/00/GS ENT(d /ENP(v)/ENP(h)/ENP(h)/IED-2/ENP(1) Pa-4/P1-4/PR-4/Pk-4/P1-4 ACCESSION NR: AT5017383 UR/0000/81/000/000/0048/0055 AUTHO: Perov, G. I. (Leningrad); Rodiondv, Yu. V. (Leningrad) TITLE: One version of a transistorized voltage-binary code converter BOURCE Konferenti iya po avtomaticheskomu kontrolyu, i metodam elektricheskikh izmerenity. 31, Novosibirik, 1961. Avtomaticheskiy kontrol' i metody elektricheskikh izmereniy; trucj konferents i, t. 2: Tsifrovyye izmeritel'nyye pribory. Elektricheskiye izmereniya nee aktricheskikh velichin. Ustroystva avlomaticheskogo kontrolya i upravleniya v promyab ennosti (Automatic control and electrical measuring techniques; transactions of the conference, v. 2: Digital measuring instruments. Electrical measurements of nonelectrical quantities. Devices for automatic control and regulation in industry). Nivosibi sk, Redizdal Sib. otd. AN SSSR, 1964, 48-55 TOPIC TAGE: transitionized converter, voltage-binary code converter, digital control AISTRACT: The article describes the design and testing of an experimental converter of voltage into binary code, intended for the input of continuous information into electronic digital control devices. The range of conversion voltage changes is 1-10 V, the conversion accuracy is 10.5%, the conversion time is 50 µsec, the number of voltages Cord 1/2

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PEROV. G. I.

"Calculation of the Duration of the Quasi-Equilibrium Condition in a Phantastron System," by G. I. Perov, Radiotekhnika, No 12, Dec 56, pp 61-74

The author gives an account of a method of analyzing phantastron circuits. A method of phase curve construction is considered, and the physical nature of the resulting processes is explained.

The fundamental analysis of the original system of equations leads to the derivation of a formula for determining the duration of the quasi-equilibrium state.

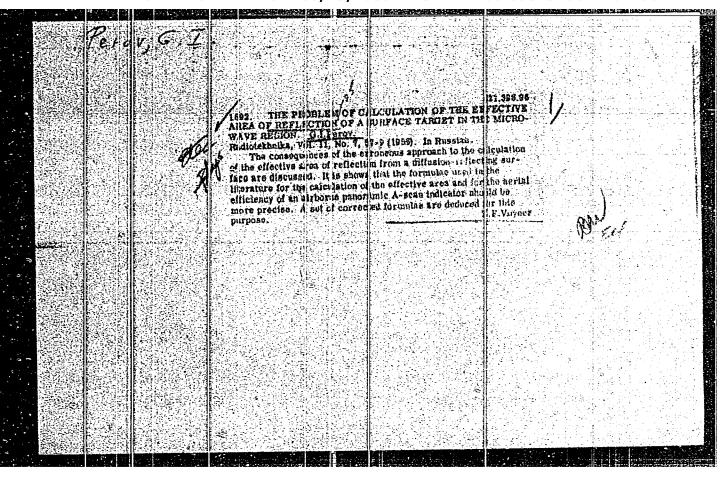
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FEFOV, J. I.,

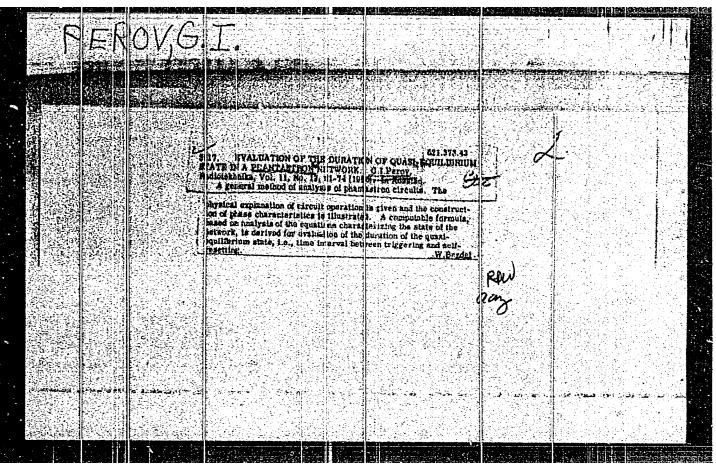
7. I. Perov, in a paper "An Engineering Method of Calculating a Fhantastron" considered phantastrons as single-tube trigger devices, used as circuits with exact time-delay action. The paper gives the calculation methods and the data of experimental control for two types of tubes.

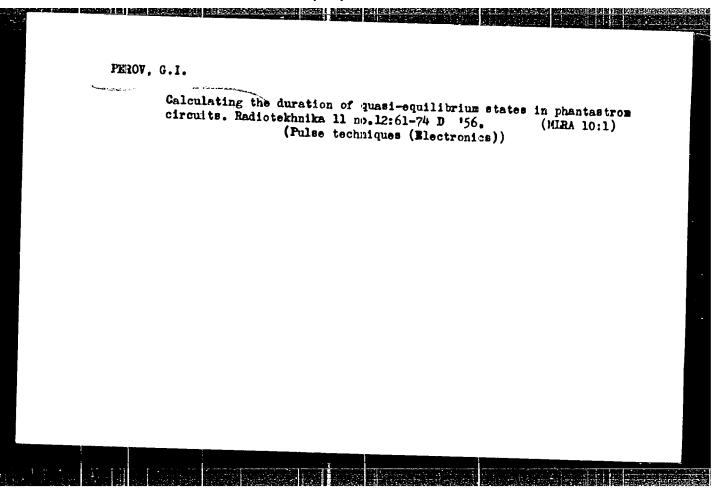
Presented at the Eleventh Scientific and Technical Session of the Leningrad Section VIDRIE (Scientific and Technical Society for Ladio and Electricity) imeni A. S. Popov, dedicated to the celebration of Madio Day, Leringrad, 16-24 Apr 56.

Radiotekhnika, No. 7, 1956



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SUBJECT

USSR / PHYSICS

CARD 1 / 2

PA - 1812

AUTHOR TITLE

PEROV, G. I.

The Computation of the Duration of the Quasi-Stable State of a

Phantastron.

PERIODICAL

Radiotechnika, 11, fasc. 12, 61-74 (1956)

Issued: 1 / 1957

Phantastron is a single-tube sweep circuit with a capacitive grid anode and a cathode connection. In the present work an analysis of the phantastron circuit is carried out for a certain operating state which is characterized by the quantities  $R_k$  (cathode resistance) and  $U_{c2}$  and  $U_{c3}$  (potentials, where the numbers denote the grids). For certain types of tubes the anode characteristics are represented in diagram form. The analysis can be carried out with the help of these characteristics if, besides, the initial potentials of the anode and of the first grid are known. At first the initial system of equations is derived. An investigation of these equations shows that a solution of this system of equations is possible only after an additional connection has been established between the potential modifications on the cathode and on the first grid. The character of this connection differs according to the different stages of operation of the phantastron circuit. Therefore, the different stages are henceforth analyzed individually. At first a diagram of the oscillation cycle in the plane i<sub>1</sub> - U<sub>c1</sub> is constructed and the motion of the point which represents the state of the circuit is investigated in this plane. For the stage of rapid changes a relation is derived from which it may be seen that a modification of the poten-

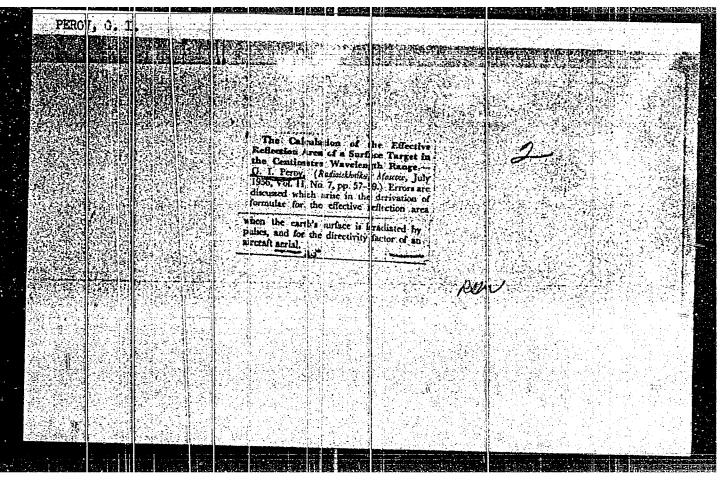
Radiotechnika, 11, fasc. 12, 61-74 (1956) CARD 2 / 2

PA - 1812

· tials on the anode and on the first grid takes place of its own accord if the counter of the right side of the equation is different from zero. If the counter becomes equal to zero, the quasistationary state is produced. This state cannot be of any duration as the condenser C is discharged during this period by the current i2, which, however, leads to an uninterrupted modification of the working states of the system. After the stage of rapid modification there follows the next operating stage of the phantastron, in the course of which the quasistationary state remains unchanged. At the end of this stage of operation the self-excitation process is again revived. Now the formula for the computation of the duration of the working stage is dealt with, and the formula herefore is set up. Next, the selection of the resistance  $\mathbb{R}_k$  and of the phantastron tube is explained. In conclusion it is pointed out that as a basis for an engineer-like computation of the phantastron circuit it is opportune to take such characteristics as have been selected experimentally for certain modes of operation and in the case of the optimum value of the cathode resistance  $R_{\mathbf{k}}$ . An experimental examination of the above described computation method resulted in an error of only 10 to 15%.

INSTITUTION:

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240110017-4



Category : USSR/Radiophysics - Application of radiophysical methods

I-12

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 2060

Author : Perov. G.I.

: On the Problem of the Calculation of the Effective Reflecting Area of a Title

Surface Target in the Centimeter Band.

Orig Pub : Radiotekhnika, 1956, 11, No 7, 57-59

Abstract : Remarks concerning the cause of the erroneous approach, found in the liter-

ature, to the calculation of the effective reflecting area of a surface producing diffuse reflection of a radio wave. It is indicated that the equations given in certain references for the effective reflection area and for the directivity gain of an airplane panoramic radar set should be reviewed.

Card : 1/1

PEROV. G. 1.

USSR / PHYSICS Radaw SUBJECT

CARD 1 / 2

PA - 1361

AUTHOR TIPLE

PEROV, G.I. On the Problem of the Computation of the Effective Reflecting Area

of a Surface Target within the Range of Centimeter Waves.

PERIODICAL

Radiotechnika, 11, fasc. 7, 57-58 (1956)

Issued: 8 / 1956 reviewed: 10 / 1956

The present work remarks upon the faulty computations, such as are found in literature, of the effective reflecting area of surfaces which reflect radio waves diffusely. This relates to the impulselike irradiation of the surface of the earth, as e.g. by the panorama radiolocator of an aircraft. The surface of the earth behaves with respect to centimeter waves like a diffusely reflecting surface. It is therefore possible, when investigating the field, to do so on the basis of LAKBERT'S law according to which the diagram of secondary radiation is a sphere that touches the reflecting surface. If part of the surface of the earth with the area S4 is uniformly irradiated, the density of the power flux of the reflecting wave through the surface of the hemisphere of the radius R around the point B (R - distance between the radiolocation station and the reflecting object) is D<sub>20</sub> - D<sub>2m</sub> sin Q. Here D<sub>2M</sub> is the density of the power current at zenith (point A),  $\theta$  - the angle above the horizon of the investigated point B. If  $D_{2M}$  is known the power  $P_{refl}$  which is reflected by the surface S<sub>1</sub> can be computed by integration of the density of the power current with respect to the surface of the hemisphere. ()n the other hand, it is true that